MD50

COST-EFFECTIVENESS ANALYSIS OF FOUR VALIDATED TECHNIQUES OF ACCELERATED PARTIAL BREAST IRRADIATION FOR THE TREATMENT OF EARLY-STAGE BREAST CANCER: SPANISH PUBLIC HEALTH SYSTEM STANDARD ESTIMATIONS

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OBJECTIVES: Partial breast irradiation (PBI) can be a safe alternative to standard whole breast irradiation (WBI) in favourably early breast cancer and, profitably, is delivered in a shorter time. Four different techniques have been described in randomized trials (follow-up > 4 years): intraoperative-radiotherapy (IORT), delivered at the time of tumorectomy; low-dose-rate brachytherapy (LDR), delivered in 1 day; high-dose-rate brachytherapy (HDR) and high-dose-rate brachytherapy (HDR), both delivered in 5 days. For comparison, WBI is delivered in seven weeks. The objective of this study was to compare the cost-effectiveness of the 4 different technical approaches to PBI, for the treatment of selected favourable early breast cancer patients, using current cost estimations within the Spanish Public Health System.

METHODS: A decision-analysis model was performed using efficacy data from previous prospective trials, calculated in years without mastectomy (YWM). Direct costs were estimated based on charges applied by Madrid’s Autonomous Community, and were expressed in Euros (€).

RESULTS: The cost of delivering PBI to local recurrence rates where individualized, and charges weighted for the frequency of its occurrence. A probabilistic sensitivity analysis was conducted to validate the robustness of the results. The total cost of 5488.25 € was estimated for LDR, 6291.19 € for HDR, and 8895.71 € for HDR. The incremental cost-effectiveness ratio (ICER) comparing IORT to HDR was 17209.41 €/YWM. All brachytherapy techniques (LDR and HDR) were dominated. Sensitivity analysis showed that ICER depends mainly on recurrence level after EBRT, but also to IORT costs.

CONCLUSIONS: In a Spanish Public Health Care scenario, IORT showed the best incremental cost-effectiveness for patients with early breast cancer and, due to its intralesional administration (same hospital admission required for surgery), should be considered a compelling alternative, in particular for patients with complex transportation demands to access radiotherapy facilities.

PM51

COST-EFFECTIVENESS OF A PREDICTIVE TEST OF THE BENEFIT OF CHEMOTHERAPY

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OBJECTIVES: In breast cancer, adjuvant chemotherapy is often prescribed as a precautionary measure and sometimes unnecessarily. A diagnostic test based on a panel of 21 genes estimating the risk of recurrence at 10 years for women with early-stage breast cancer has been developed (Oncotype-DX®). A cost-effectiveness analysis of 21 genes estimating the risk of recurrence at 10 years for women with early-stage breast cancer was performed. The objective was to decide whether to administer chemotherapy or not was compared to utilization of surgery alone, discontinuation and hypoglycemia rates.

METHODS: A decision-analysis model was performed using input data obtained from a study evaluating the model predictions using data from the PARTNER randomized control trial (cohort B). Quality of life values were determined through literature review, expert opinion, and data provided by the PARTNER investigators. The London Health Sciences Centre Case Costing Initiative was performed using photographs of patients in which the genetic test led to change the oncologist’s decision, as well as as scientific literature and grey literature. The test was associated with savings of €570 (€1600 with productivity loss cost) per patient from societal perspective and gains of 0.15 life-years and 0.14 QALYs per patient. One-way sensitivity analyses showed that the cost was most sensitive to the use of therapy and QALYs to discount rate and to the proportion of patients for whom the decision not to give chemotherapy was reversed with the test. The use of the test seems to represent efficient use of health care resources in French practice. This test provides an opportunity to optimize treatment prescription by avoiding unnecessary chemotherapy and by prescribing chemotherapy to women who have not received it based on standard decision criteria.

PM52

DIAGNOSTICS IN COST-EFFECTIVENESS ANALYSIS: THE EVALUATION OF THE EOS 2D/3D X-RAY IMAGING SYSTEM

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OBJECTIVES: The EOS 2D/3D X-ray imaging system is a novel technology with potential clinical benefits in the evaluation of orthopaedic conditions. However, there is no evidence on other benefits in addition to those derived from reductions in the radiation dose associated with the cost-effectiveness ratio (ICER) compared with standard X-ray and highlight some of the main challenges in the evaluation of diagnostics. METHODS: A model was developed to evaluate the long-term cost-effectiveness of EOS. Costs were from a health service perspective and outcomes were measured as quality-adjusted life years (QALYs). Threshold analysis was used to establish the necessary size of the additional health benefits and the level of patient throughput needed for EOS to be considered cost-effective.

RESULTS: The incremental cost-effectiveness ratio (ICER) of EOS was well above thresholds of €20,000 per additional QALY in all orthopaedic conditions under base-case assumptions. Patient throughput was a major determinant of cost-effectiveness. Threshold analysis on patient throughput showed that 17,700 to 27,600 scans per year with EOS, compared with 7,530 scans per year with computed radiography (CR), were needed to achieve an ICER of €20,000 per QALY. Health benefits over and above lower radiation would need to increase considerably for EOS to be considered cost-effective.

CONCLUSIONS: The health benefits estimated from EOS as a result of radiation dose reductions were insufficient to justify the cost of the system. EOS can only be shown to be cost-effective when compared to CR if the utilisation of EOS is assumed to be twice that of CR. The utilisation of CR. EOS highlights some of the difficulties of establishing the relevant pathway, potential indications, patient benefit from the imaging features, and patient throughput. The evaluation of EOS is an example of how methodological challenges presented by diagnostics can be overcome.

PM53

MODELING THE HEALTH AND ECONOMIC CONSEQUENCES OF SELF-MONITORING OF BLOOD GLUCOSE (SMBG) IN NON-INSULIN TREATED PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM) IN SPAIN

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OBJECTIVES: Evidence from recent clinical studies has shown the benefits of SMBG plus a structured testing program (SMBG+STG) in non-insulin treated patients with T2DM. The Structured Testing Protocol (STP) study found SMBG+STG can lead to improvements in glycemic control. This study assessed the cost-effectiveness of SMBG+STG versus SMBG alone from the Spanish health care system perspective in the context of the Spanish national T2DM guidelines.

METHODS: A discrete event simulation model was developed to simulate the economic and health outcomes based on A1c changes related to using SMBG+STG or SMBG alone. Baseline A1c (8.4%) changes over 1 year (-1.2% and -0.9%) with SMBG+STG vs SMBG alone. Discontinuation and hypoglycemia rates were from the STP study. Population and cost inputs were from published Spanish sources. Over a lifetime horizon (>30yrs), the model predicts: diabetes related complications (cardiovascular disease, stroke, amputations, end stage renal disease), life years (LYs) and quality adjusted life years (QALYs). Costs associated with events were estimated. Benefits and costs were discounted at 5%.

RESULTS: SMBG+STG was predicted to reduce complications and associated costs. Lower A1c and consequent complications prevention with SMBG+STG translates into a dominant incremental cost-effectiveness ratio. Comparisons with a group not utilizing SMBG yielded similar results. SMBG+STG is a cost-effective option compared to SMBG alone. An A1c reduction of ± 1% in a cost-effective outcome. Decision makers should consider designing programs to educate patients about SMBG+STG.

PM54

TRANS-CATHETER AORTIC VALVE IMPLANTATION FOR THE NON-OPERATIVE MANAGEMENT OF AORTIC STENOSIS: A COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: To assess the cost-effectiveness of TAVI compared with standard therapy consisting mainly of balloon aortic valvuloplasty (BAV) in patients with severe aortic stenosis who are ineligible for conventional aortic valve replacement (AVR). Population of interest was patients with T2DM from the PARTNER randomized control trial (cohort B). Quality of life values were determined through literature review, expert opinion, and data provided by the PARTNER investigators. The London Health Sciences Centre Case Costing Initiative was performed using data from a study evaluating the model predictions using data from the PARTNER randomized control trial (cohort B). Quality of life values were determined through literature review, expert opinion, and data provided by the PARTNER investigators. The London Health Sciences Centre Case Costing Initiative was performed using data from a study evaluating the model predictions using data from the PARTNER randomized control trial (cohort B). Quality of life values were determined through literature review, expert opinion, and data provided by the PARTNER investigators.

RESULTS: The primary outcome measure was the incremental cost-effectiveness ratio (ICER) with benefits expressed as quality-adjusted life years (QALYs). Costs were expressed in 2011 CAD$. Both costs and benefits were discounted at 5%. RESULTS: The base case ICER was approximately $38,448 per QALY gained. The results of the sensitivity analyses yielded ICERs ranging from approximately $32,238/QALY to $34,887/QALY. ICTER estimates were most sensitive to changes in the cost of the Edwards SapientTM/Device. CONCLUSIONS: At cost-effectiveness thresholds normalizing should be defined to value for money. The Canadian AHSR recommends a cost-effective treatment option for patients with severe aortic stenosis who are currently ineligible to undergo conventional aortic valve replacement in the province of Ontario.

PM55

SACRAL NERVE MODULATION (SNM) FOR THE TREATMENT OF IDIOPATHIC ROENTGENOGRAPHIC VESTIBULAR BLADDER: COST-EFFECTIVE IN THE UK COMPARED TO OPTIMAL MEDICAL THERAPY, BOTULINUM TOXIN A (BONT-A) AND PERCUTANEOUS TIBIAL NERVE STIMULATION (PTNS)

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